Opinion | Use data science for risk prediction

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Sebi needs to invest heavily in automation tools, artificial intelligence (AI) solutions, and predictive analytics

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Sebi headquarters in Mumbai. Photo: Mint.

The Securities and Exchange Board of India (Sebi) has invested a lot in recent years in revamping its technology platforms. It now gets granular details of all trades carried out in the market from the exchanges, along with information on intermediaries and participants. Various reporting and surveillance tools have been installed on top of the data, which generates alerts and allows its officers to examine each market activity in detail. But going forward, this may not be enough. Given the widespread use of technology by market participants and the preponderance of

algorithmic trading in capital markets, Sebi needs to invest heavily in automation tools, artificial intelligence (AI) solutions, and predictive analytics. These tools will be able to sift through the large quantity of data residing in its data warehouses and deliver meaningful insights, including behavioural trading patterns of market participants. For this to happen, Sebi must bring all its existing platforms under one unifying technology policy framework. This will help integrate these platforms and allow them to converse with each other.

First, Sebi must create a data science department that will focus on reviewing financial statements and filings to detect reporting, disclosure and audit failures. The principal goal of the department will be detection and prosecution of violations involving false or misleading financial statements and disclosures. The department will also focus on identifying and exploring areas susceptible to fraudulent financial reporting, including the ongoing review of financial information and use of data analytics. To complement the insights obtained using data analytics, the department personnel would review the results manually and apply their industry expertise and professional scepticism. This would be essential to address the risk of false positives that data analytics may generate. Therefore, manual intervention and analysis is critical. This department should consist of professionally qualified people, including *inter alia* data scientists, statisticians, chartered accountants, lawyers, financial analysts, forensic specialists, and industry and tax experts.

Second, Sebi should create a sub-unit for assessing accounting quality. As I have highlighted elsewhere , the quality of accounting in Indian firms remains poor despite the presence of self-regulatory organizations such as the Institute of Chartered Accountants of India. Academics in finance and accounting have long studied the information contained in financial statements to better understand the discretionary accounting choices that are made when presenting financial information to shareholders. Such research should be utilized to identify companies for priority examinations of accounting quality.

Third, Sebi should set up a sub-unit for prevention of market abuse. Within the data science department, it should set up a team to proactively probe and intervene to prevent abusive market practices. These may range from corporate restructurings, preferential rights, changes in capital structure and related party transactions. To achieve this, Sebi must scale up its governance function by setting up a market abuse unit (MAU) and empowering it with a well-defined mandate. The unit should comprise agents who are skilled in investigation of insider trading, trading strategy experts, broker dealers, analysts and programmers. The unit should have the necessary power to engage any third-party agency to support them in carrying out the required research activities.

Fourth, Sebi should embrace the use of text analytics to detect obfuscation in financial statements. Path-breaking developments in natural language processing now enable assessments of the tone and sentiments such as deception in unstructured text. Using these methods, the department can analyse distinct topics or words of key interest. Such analysis of sentiment and obfuscation can be useful because instances where negative sentiment is combined with obfuscation may throw up red flags that would be potentially worthy of further investigation.

Fifth, Sebi should leapfrog other regulatory organizations in the use of AI. AI could also be extremely useful in analysing unstructured data that is filed with the stock exchanges and the ministry of corporate affairs . It can be used especially to pick up

key words from financial statements to see any unusual trends in reporting. Further, AI can help develop expected reporting patterns and any deviations from such patterns. For instance, upon purchase of party hats, an online retailer is likely to inform us that other shoppers also purchased birthday candles. It is the power of AI that analyses historic purchase patterns and then predicts future purchasing decisions. Such use of AI can enable better detection of white-collar crime.

Last, but possibly the most crucial, Sebi should enable the creation of high-quality data and disseminate this for widespread research. Data analytics and use of AI rests on a fundamental pillar: creation of high-quality data. Sebi requires all listed entities to provide data in XBRL format to the exchanges. It should actively manage the quality of information it receives by requiring the data to pass a set of machine-executable business rules before it is accepted. This would ensure that the data being entered by market participants is necessarily of high quality.

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This is the third in a four-part series. Comments are welcome at theirview@livemint.com

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